

Remarks

Claims 1-21 were initially pending in the subject application. In response to a restriction requirement (dated September 26, 2002), claims 1, 3-13, and 21 were elected for prosecution on the merits. Claims 2 and 14-20 stand withdrawn from consideration and have been cancelled in this response. Claims 22-32 are newly presented for examination. Support for the new claims and the amendments to the pending claims can be found throughout the subject specification, including, for example, at pages 12, line 13 through page 14, line 3 and examples 7-10. Favorable consideration of the claims now presented, in view of the remarks and amendments set forth herein, is earnestly solicited.

Claims 1, 3-13, and 21 have been rejected under 35 U.S.C. § 102(b) as being anticipated by Fuhrman *et al.* The Office Action asserts that the subject invention is anticipated by the teachings of the reference on the grounds that it teaches the addition of iron to a nodulation inoculant in a variety of concentrations (referencing the Discussions section of the paper). The rejection appears to rely upon the doctrine of inherency in order to establish the rejection as it acknowledges that the reference is silent with respect to the effects of iron on the molecule disclosed as CDF in the subject application. Applicants respectfully traverse the rejection on the following grounds.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993); *In re Oelrich*, 666 F.2d 578, 581-82, 212 U.S.P.Q. 323, 326 (C.C.P.A. 1981). To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (emphasis added).

In the case of the rejection of record, no extrinsic evidence has been provided that would demonstrate that persons of ordinary skill in the art would have recognized the effects of iron addition, to growth medium, on the levels of CDF in nodulation inoculants. Indeed, the reference itself indicates that the role of iron in the nodulation activity of *B. japonicum* strains in soybean

plants is unclear and that the addition of certain rhizosphere bacteria, particularly fluorescent *Pseudomonas spp.* can affect the ability of *B. japonicum* to nodulate soybean plants (see page 112, last paragraph). The reference further indicates that the results suggest that rhizosphere microflora may exert a selective influence on nodulation by bradyrhizobia in field soils. Fuhrmann *et al.* further teach that the addition of iron (ferric hydroxide) had no effect on nodule occupancy by *B. japonicum* strains in the absence of the additional application of other rhizosphere bacteria (see page 110, column 2, penultimate sentence). Accordingly, it is respectfully submitted that one skilled in the relevant art would not have recognized that iron had any role in nodulation activity of *B. japonicum* or that iron reduces the production of CDF by *B. japonicum* in culture or in a nodulation inoculant. Indeed, the skilled artisan would have, likely, recognized that the addition of other rhizosphere bacteria was necessary to increase nodule occupancy by *B. japonicum*. Accordingly, reconsideration and withdrawal of the anticipation aspect of this rejection is respectfully requested.

The Office Action further states that even if the reference fails to anticipate the claimed subject matter, the invention remains obvious in view of its teachings as it clearly establishes that iron concentration in bradyrhizobium medium is a result effective variable and, as such, would have been routinely optimized by one skilled in the art to effect the growth of the bacterium and its nodulating activity. Applicants respectfully traverse.

It is respectfully submitted that a particular parameter must first be recognized as a result-effective variable, *i.e.*, a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 U.S.P.Q. 6 (C.C.P.A. 1977). In the case of the instant invention, it is respectfully submitted that one skilled in the art would not have recognized iron levels to be such a result-effective variable. Again, Fuhrmann *et al.* teach that the addition of iron (ferric hydroxide) had no effect on nodule occupancy by *B. japonicum* strains in the absence of the additional application of other rhizosphere bacteria (see page 110, column 2, penultimate sentence). Thus, it is respectfully submitted that one skilled in the art would have recognized that the co-inoculants used in the teachings of the reference were more likely a result-effective variable than the addition of iron in view of the teachings of the reference. Accordingly, it is respectfully submitted that one skilled in

the art would not have been motivated to optimize iron concentrations in the medium; reconsideration and withdrawal of the rejection is respectfully requested.

Applicants further submit that the cited prior art also fails to teach the limitations of the independent and various dependent claims. For example, the prior art fails to teach: a) the addition of iron to: growth medium for a nodulation inoculant; or liquid growth medium; b) the addition of iron to growth medium concomitantly with, or after, the nodulation inoculant is added to said medium; the addition of a single strain or species of nodulating bacteria to liquid growth medium; and/or increases in the nodulation efficiency of nodulation inoculants that are associated with the growth of the inoculants in iron containing medium (see, for example, the limitations of claims 1, 6, 9, and newly added claims 25-32). Applicants respectfully submit that iron was not added to growth medium for a nodulation inoculant by Fuhrmann *et al.* (see page 109, column 1, Materials and Methods, paragraph 2). Rather, iron was added to soils (vermiculite) in which plants were to be grown (see Materials and Methods, Iron-effect Studies). It is respectfully submitted that one skilled in the art would not consider soil to be a growth medium for bacterial cells. Accordingly, reconsideration and withdrawal of the rejection as applied to these claims is respectfully requested.

Turning to the rejection as applied to the product-by-process claim of claim 21, it is respectfully submitted that the claimed composition possesses novel and non-obvious differences as compared to nodulation inoculants of the prior art or those taught by Fuhrmann *et al.* For example, the claimed composition comprising a nodulation inoculant would exhibit increased nodulation efficiency by virtue of having decreased levels of quorum factor (CDF) as compared to the inoculant produced by Fuhrmann *et al.* or those of the prior art (see Example 7, paragraphs 2-3). Accordingly, nodulation inoculants produced according to the claimed methods would have an increased ability to nodulate plant roots as compared to the nodulation inoculants of the prior art because these compositions contained reduced amounts of CDF. Such differences are not taught, suggested, nor rendered obvious by the prior art and reconsideration and withdrawal of the rejection is respectfully requested.

The Commissioner is hereby authorized to charge any fees under 37 C.F.R. §§ 1.16 or 1.17 as required by this paper to Deposit Account 19-0065.

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Applicants also invite the Examiner to call the undersigned if clarification is needed on any of this response, or if the Examiner believes a telephone interview would expedite the prosecution of the subject application to completion.

Respectfully submitted,



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Attachment: Marked-Up Version of Amended Claim

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Marked-up Version of Amended Claim

Claim 21 (Amended):

A composition comprising a carrier and a nodulation inoculant produced according to the process of claim 1, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, or 32.